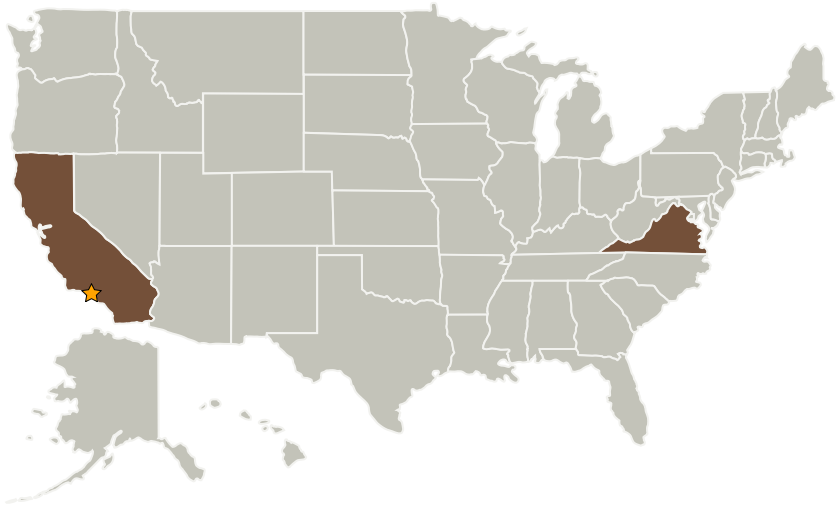
Nanocomposite Thermolectric Materials by High Pressure Powder Consolidation Manufacturing, Phase I

Completed Technology Project (2007 - 2007)

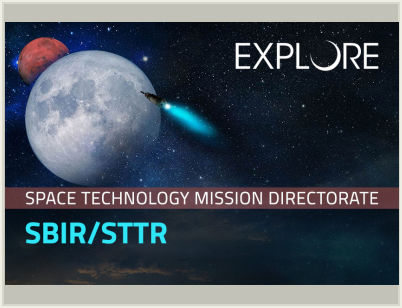
Project Introduction

In response to NASA's need to develop advanced nanostructured thermolectric materials, UTRON is proposing an innovative high pressure powder consolidation manufacturing to fabricate near net shape and net shape thermolectric components with improved densification and properties than possible conventional powder metallurgical methods. Potential candidate materials such as Tellurides, TAGs and SiGe micro/nano composites will be developed at high compaction pressures (150 tsi) using select geometries/shapes and optimized disk samples will be characterized for geometrical, shrinkage, mechanical, microstructure/microchemistry and thermolectric properties. The proposed work has been planned in close subcontract/collaboration with Teledyne and Auburn University-Space Research Institute. Other advanced nanocomposite alloys and scaling up to fabricate complex geometries will be done in Phase II.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
UTRON, Inc.	Supporting Organization	Industry	Manassas, Virginia



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
California	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.2 Mobility
    - TX04.2.1 Below-Surface Mobility